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February 04, 2010

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW, Room TW-A325
Washington, DC 20554

Attn: Wireless Telecommunications Bureau

RE: Reply Comments WT Docket 10-4
Use of Signal Boosters and Other Signal Amplification Techniques Used With Wireless Services

Dear Ms. Dortch;

The County of Orange, California currently operates the 800MHz Countywide Coordinated Communications System (CCCS) simulcast digital and analog, multi-site, trunked radio system supporting over 20,000 subscribers, and serving 128 public safety partner organizations and 34 cities. 800 MHz CCCS provides both routine and emergency voice communications services, helping to serve and protect the 3.1 million citizens within Orange County, over approximately 800 square miles. In conjunction with 800 MHz CCCS are several hundred local government owned and privately owned Bi- Directional Amplifier (BDA) systems that supplement in-building two way public safety radio communications coverage where it wouldn't otherwise exist or would be unreliable. The County is therefore technically expert in such systems technologies.

The County also understands the negative side of poorly designed and implemented in-building and vehicular booster amplifiers, where we suffer from random and sometimes intense and widespread RF interference from these uncontrolled sources, almost on a weekly basis. The degree of 800 MHz RF interference can vary from random events that interrupt or degrade communications, to blocking of channels that cause our trunked system controller to lock-out voice channels for extended periods, thereby reducing system traffic handling capacity. County technical staff responds to most all RF interference complaints affecting us, making significant efforts to locate the sources and to remedy the complaints. Where the sources are identified as

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being unlawful or faulty equipment, the County will request that the equipment owner/operator ceases operation immediately. In cases where offending equipment owner cooperation is not forthcoming, the County then escalates the complaint to the local FCC office for assistance. The County on an average, can spend around 300 hours per year or more (at a cost to the County of over \$25,000 per year) investigating such complaints, direction-finding the source, gaining access, identifying ownership, requesting shut-off of errant equipment, and escalating complaints to the FCC where necessary. The County's years of experience with RF interference complaints find that very few complaints involve properly designed and engineered in-building systems. Most of our 800 MHz RF interference sources in fact, are from non-engineered RF coverage booster devices, unlicensed RF booster devices, RF booster devices in unlawful applications such as providing area-wide coverage enhancement on a channel belonging an FCC licensed service without their express permission, and from vehicular RF signal boosters that are moving targets which are difficult to locate and remedy, potentially causing numerous and random RF interference impacts to various local systems as the vehicle is in motion and in passing proximity to numerous fixed communications sites.

The County of Orange agrees with the proposal and concepts proposed by the Jack Daniel Company in this filing, and supports the assertions where it is stated that:

On this basis, it is important that the distinctions between the types of units sought to be used be clarified and codified. In order to avoid confusion and reduce the opportunity for interference from improper use of improperly sold and/or installed units, I have the following recommended changes to the Commission's Rules (changes highlighted in red):

Definitions: 90.7:

Mobile amplifiers are radio frequency amplifiers physically connected to the mobile radio, portable or handset, typically to the antenna connector. Not to be confused with Signal Boosters.

Handset Amplifiers or other devices that utilize internal antennas to reradiate radio frequency signals are signal boosters.

R§ 90.219 Use of signal boosters.

Licensees authorized to operate radio systems in the frequency bands above 150 MHz may only employ signal boosters at fixed locations in accordance with the following criteria:

(a) The amplified signal is retransmitted only on the exact frequency(ies) of the originating base, fixed, mobile, or portable station(s). The signal booster will fill in only weak signal areas and cannot extend the system's normal signal coverage area.

(b) Class A narrowband signal boosters must be equipped with automatic gain control circuitry which will limit the total effective radiated power (ERP) of the unit to a maximum of 5 watts under all conditions. Class B broadband signal boosters are limited to 5 watts ERP for each authorized frequency that the booster is designed to amplify.

(c) Class A narrowband boosters must meet the out-of-band emission limits of §90.210 for each narrowband channel that the booster is designed to amplify. Signal boosters employing one or more bandwidths in excess of one authorized channel bandwidth of the licensee are defined as Class B signal boosters. Class B broadband signal boosters must meet the emission limits of §90.210 for frequencies outside of the booster's designed passband.

(d) Class B broadband signal boosters are permitted to be used only in confined or indoor areas such as buildings, tunnels, underground areas, etc., or in remote areas, i.e., areas where there is little or no risk of interference to other users. Class B signal boosters may communicate with the licensee's associated base or repeater stations in urban areas. Class B broadband signal boosters must meet the emission limits of §90.210 for frequencies outside of the booster's designed passband.

(e) The licensee is solely given authority to operate signal boosters without separate authorization from the Commission. Certificated equipment must be employed and the licensee must ensure that all applicable rule requirements are met. The use of certified equipment does not eliminate the need for the licensee's approval to use a signal booster.

(f) Licensees employing either Class A narrowband or Class B broadband signal boosters as defined in §90.7 are responsible for correcting any harmful interference that the equipment may cause to other systems. Normal co-channel transmissions will not be considered as harmful interference. Licensees will be required to resolve interference problems pursuant to §90.173(b).

(g) Rebanding

(i) Upon 100% completion of 800 MHz rebanding in any public safety region, as proscribed in FCC R&O 04-168, the bandwidth of Class B signal boosters used by licensees pursuant to Section 90.219 shall be no greater than the frequency span approved for the Public Safety and Business/Industrial Radio Pools.

Signal boosters in use by public safety licensees on those frequencies listed in Section 90.17 shall reduce the bandwidth of signal boosters as part of rebanding compliance to assure maximum interference protection between 90.17 licensees and rebanded CMRS licensees.

All other signal boosters in service within the Part 90 800 MHz band, as of (2 years from date of final R&O, operating with wider bandwidth must reduce bandwidths to match the

frequency allocation of the CMRS Service Pool accordingly within 2 years or remove the signal booster from service.

(ii) Bandwidth, as applied in this paragraph, is that passband bandwidth that provides a minimum of 35 dB rejection of adjacent frequencies removed no greater than 1 MHz at the radio service band edge.

(j) All signal booster manufacturers shall include with every product the following printed statement in no less than 10 point font;

Signal boosters are authorized as secondary devices and as such must accept any interference caused by a licensed radio service, and in the event the signal booster causes interference to any licensed radio service operation the signal booster operation must cease immediately until the interference is corrected.

This device can produce interference to public safety and other radio communications if adjusted improperly or installed improperly. Follow manufacturer's installation instructions, especially the minimum isolation required between the outside antenna and the inside antenna(s). If you are unqualified to make these measurements you may hire a wireless service person to make and provide documentation of these measurements.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'R. Grimes', with a stylized flourish at the end.

Ray Grimes
Assistant Director
Engineering Section